



LOUISIANA NATURAL AND SCENIC RIVERS SYSTEM

PERMIT APPLICATIONPermit # 920 (Assigned by Department)

The Louisiana Department of Wildlife and Fisheries' Scenic Rivers program is authorized by LRS title 56, Chapter 9 Part II. This law requires permits authorizing activities in or affecting rivers that have been designated by the Louisiana Legislature as Natural and Scenic. Information provided on this form will be used in evaluating the application for a permit. Information in this application is made a matter of public record through issuance of a public notice. Disclosure of the information requested is voluntary, however, the data requested are necessary in order to communicate with the applicant and to evaluate the permit application. If necessary information is not provided, the permit application cannot be processed nor can a permit be issued.

APPLICANT INFORMATION

Name of Applicant 3 Z's Properties	Name of Agent (if any) Kyle Associates, LLC
Address 5010 Veterans Blvd.	Address 638 Village Lane North
Address	Address
City, State, Zip Metairie, LA 70006	City, State, Zip Mandeville, LA 70471
Phone	Phone 985-727-9377

DESCRIPTION OF THE PROPOSED ACTIVITY

Brief summary of the description and purpose of the proposed activity (details to be attached as a separate document)
Soil pinning along the top of Flower's Bayou bank to stop soil shifting.
Is any portion of the activity complete? YES or NO (If yes, indicate month and year of completion)

LOCATION OF PROPOSED ACTIVITY

Stream Name	Flower's Bayou	Names, Addresses, Phone Numbers of Adjacent Property Owners
Parish	St. Tammany	Greenbriar Hospital, 201 Greenbriar Blvd.
Section	47	Covington, LA 70433, (985) 249-7780
Township	7 South	Jared Bowers, 42548 Happywoods Rd.
Range	11 East	Hammond, LA 70404, (985) 365-0400
Latitude/Longitude	30.4575 N / 90.149167 W	3 Z's Properties 5010 Veterans Blvd.

ENVIRONMENTAL ASSESSMENT

Must be a separate document. See the attached instruction sheet for completing the assessment.

CONFIRMATION OF INFORMATION ACCURACY

Application is hereby made for a Scenic River Permit to authorize the activities described herein. I certify that I am familiar with the information contained in this application and that, to the best of my knowledge and belief, such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities, or I am acting as the duly authorized agent of the applicant.



Signature

12/19/14

Date



January 12, 2015

Nicole Zeringue
Kyle Associates, L.L.C.
638 Village Lane North
Mandeville, LA 70471

LDWF Scenic Rivers Program
P.O. Box 98000
Baton Rouge, Louisiana 70898-9000

Kyle Associates, LLC, Agent for 3 Z's Properties, previously submitted a Louisiana Natural and Scenic Rivers System Permit Application on December 19, 2014. The permitting agency requested additional information regarding the description of the project, as well as the Storm Water Prevention Pollution Plan (SWPPP).

Please accept the attached Environmental Assessment with more detailed description of the project as well as the SWPPP and associated drawings as Addendum #1 to the original Permit Application dated December 19, 2014. Please feel free to contact me if you need additional information or have any questions.

Kindest Regards,

A handwritten signature in black ink, appearing to read "Nicole Zeringue", is written over a faint, larger version of the same signature.

Nicole Zeringue
Kyle Associates, L.L.C.



State of Louisiana

BOBBY JINDAL
GOVERNOR

DEPARTMENT OF WILDLIFE AND FISHERIES

ROBERT J. BARHAM
SECRETARY

Dear Scenic River Permit Applicant:

Please review and concur on the following statement regarding the issuance of permits by the Louisiana Department of Wildlife and Fisheries. This agreement must be signed and returned before a Scenic River Permit can be issued.

"I have been advised and do understand that by applying for and accepting a Scenic Rivers permit issued by the Louisiana Department of Wildlife and Fisheries, I am being allowed to engage in an activity which would otherwise be prohibited by law or for which a permit is required. I understand that the permit is not a license and confers no property right upon me. I specifically agree to abide by all State and Federal fish and wildlife laws and regulations, and all State and Federal laws and regulations which relate to this permit or the permitted activity, and by all other terms and conditions of this permit. I understand that the permit for which I am applying may be suspended, annulled, withdrawn or revoked and that I may be assessed civil penalties, all in accordance with the provision of the Louisiana Administrative Procedure Act, and that I may be denied future permits as a consequence of my failure to fully and completely comply with the terms and conditions of the permit, as well as other laws and regulations pertinent thereto. If served with or notified of a cease and desist order signed by the Scenic Rivers Administrator, I agree to immediately and without delay cease all activities and operations which relate to the permitted activity or which are impacting the Scenic River, until such time as the matter can be resolved in an adjudicatory hearing pursuant to the Louisiana Administrative Procedure Act. I understand and agree that any permit issued to me by the Louisiana Department of Wildlife and Fisheries is in the nature of a privilege which is being voluntarily extended to me by the Department and the failure on my part to cooperate with the Department can result in the loss of the privilege conferred and the denial of future requests for permits. By accepting this permit, I evidence my agreement to be bound by all conditions and stipulations set forth herein."


Authorized Signature


Date

REV. 12/7/98

ENVIRONMENTAL ASSESSMENT

Description of the Proposed Project

The proposed project consists of soil pinning procedure between the rear of the existing Winn Dixie store and the Flower's Bayou top of bank to stop soil shifting occurring at the project site. Drawings exhibiting the plan for soil stabilization for this site are attached. Movement in the soil at a depth of approximately 20.0' is resulting in a sliding of all soil above that depth, creating a structural stability issue for the pavement and building. Flower's Bayou is considered by the State of Louisiana to be a Scenic River and thus requires specific permitting to ensure no impacts occur to the body of water. A scenic rivers permit was obtained at the time of the original construction. As this is new work, a new permit is required. Furthermore, since the existing improvements are at risk of failing, it is requested that this permit be considered an emergency.

The physical activities that will occur as part of the project include 1) demolition of a certain amount of the existing pavement behind (and adjacent to Flowers Bayou) the Winn Dixie store; 2) insertion of a series of soil pins – a 24' long by 3' diameter poured in place concrete slurry columns; 3) reconstruction of the storm drainage and surface paving infrastructure; and 4) remediation of any part of the Flowers Bayou slope that has failed or was damaged due to the soil failure or the implementation of this project.

To perform the geotechnical analysis adequately, approximately half of the concrete paving in the failure area has already been removed. In these exposed areas, visqueen covering was placed and all storm drainage was connected directly to Flowers Bayou so no erosion can occur. Also, the existing wooden fence along the northwestern boundary of the site, albeit situated on failing soils, remains in place with silt fencing placed on the upstream side to prevent siltation and debris from entering the stream. The remaining demolition will occur at the time the soil pinning contractor is mobilizing. Erosion control measures will be put in place in accordance with the SWPPP prior to contractor mobilization.

The soil pinning activity involves construction of concrete columns by insertion of a concrete slurry mix injected into the soil under high pressure, beginning at the bottom of the design depth and continuing up to the surface. As this procedure is implemented, the soil slurry that is displaced is captured in a containment area and removed from the site at the end of the project. There will be 100 to 120 of these soil pins installed, generally in accordance with the plan included in this permit application.

Upon completion of the soil pinning activity, the civil portion of the project will commence, which includes reconstruction of the sub-surface storm drainage system and replacement of the pavement. This portion of the project will connect all roof drains and pavement run-off to the drain inlets that currently exist. There is one inlet (existing) that discharges into Flowers Bayou near Hyacinth Avenue. That inlet will remain and adequate splash pad to prevent slope scour installed.

Lastly, the Flowers Bayou side slope will be addressed. The soil failure that is the catalyst of the project has not affected the bayou slope for the entire reach of the project – only in isolated areas. The intent of this project is to preserve the vegetative side slopes that are stable, but address those parts of the side slope where soil failure and/or erosion has occurred. These areas will be backfilled to the original 3:1 slope design and a combination of matting and planting will be used to stabilize those areas. Additionally, the 6' fence will be reconstructed to the ground, and the silt fences installed to maintain the entire area until all vegetation is reestablished. This will also keep trash and debris from entering the bayou.

Vicinity Map

Attached are two (2) maps indicating the location of this site and proposed work to be completed.

Photographs

Attached are photographs showing multiple views of the project site and the current condition of the surface area due to soil shifting.

Other Permits Required

No other State permits are required. Since this is an emergency repair, local permitting is not required. However, construction documents will be provided to the local authority for information purposes only.

Environmental Assessment

1. Existing Land Use – Commercial use – grocery store.
2. Wilderness Qualities – The site is a developed site. There are no wilderness qualities or significant flora or fauna habitat in the project area.
3. Economic Impact of the Project – there are no economic impacts of the project as applied for. However, not performing the work may create a situation where the Winn Dixie structure is non-operational, which has a significant impact on the employees of the store and a negative impact on the customers it serves.
4. Wilderness/Rural Quality – This site is in a developed area with no wilderness/rural quality. The project will have no impact on this variable.

5. Scenic/Aesthetic Value – Flowers Bayou, at this location, has been modified over several developments to nothing more than a drainage canal. All side slopes are maximum allowed for the hydraulic flow, and the only vegetation that exists is primary succession material. There is no scenic value at present, and the project will not change that.
6. Recreational Use – This project is in commercial use and has no recreational value, therefore it will have no adverse impacts on the existing condition.
7. Ecological Systems Present – The project in its current condition is consists of concrete pavement to the top of the slope of Flowers Bayou, then a 3:1 manmade slope to the bayou channel. Any ecological systems that exist do so in the side slopes and bayou channel, which is not in the impervious work area. The side slope will have to be reconstructed in limited areas after the soil pinning project, and the conditions that existed prior to the slope failure will be restored.
8. Fish & Wildlife – This project is in a developed, commercial area. No fish or wildlife exist, and that condition will remain.
9. Botanical Elements – There is no plant life in the direct area of work. Vegetation disrupted on the bayou side slopes will be reestablished at the conclusion of the construction project.
10. Geological Features – there are no significant geologic features at the site or in the work area. The surface geology will be restored to the condition that existed at the completion of the initial project construction (Winn Dixie), which was performed under the previous permit.
11. Hydrological Feature – The project infrastructure work is located on the upper bank of Flowers Bayou, out of the channel flow. Side slope reestablishment will be required at limited locations as part of this project, and this portion of the work will include vegetative stabilization that maintains the original hydrological features of the channel, and should not cause any adverse hydrologic impacts to the waterway.
12. Water Quality – Best management practices will be utilized to prevent water quality degradation. A SWPPP has been developed and submitted as part of this permit application. Any sedimentation that is created will be maintained within the work area, and not released into the Bayou. Construction material will be contained as well. The project will have no adverse impact on the quality of water in Flowers Bayou.

Legal Agreement

The legal agreement is enclosed.

Applicant's Compliance History

The property owner has no violations in regards to the Scenic Rivers Act.

Steps Taken to Minimize Potential Impacts

Since the project is correcting a structural project and reestablishing the conditions compliant with the first permit, there should be no adverse impacts on Flowers Bayou. The only adverse condition that could exist is the release of sedimentation of construction material into the waters of Flowers Bayou. Prior to the start of construction a silt fence along with hay bales will be installed to line the existing fence and ditch to stop run-off from HBI's work entering the ditch. During HBI's operation, drill cuttings will be removed from the area with an excavator and/or vacuum trucks and hauled to an area designated by the Owner to the Southwest side of the building. This stockpile will have silt fence installed around it so as to not allow sediment or runoff from the stockpile to leave the site. Any nearby drains will have appropriate silt booms surrounding them to stop potential sediment from entering the storm drains.

Best management practices, and a strong SWPPP to be strictly adhered to, will ensure this does not occur. Also, a speedy construction period will reduce the potential for negative impacts as well.

It is requested that this permit be considered an emergency permit. The present condition of the top of bank infrastructure is precarious to the point where a significant rain event could cause a weakening of the soils and immediate failure. If this were to occur, significant sediment discharge into the bayou would occur, creating many of the adverse conditions discussed above. Geologic investigations on this site have been occurring since the spring of 2014. A solution that protects the environment and preserves the infrastructure has been determined and needs to commence immediately.

Alternatives

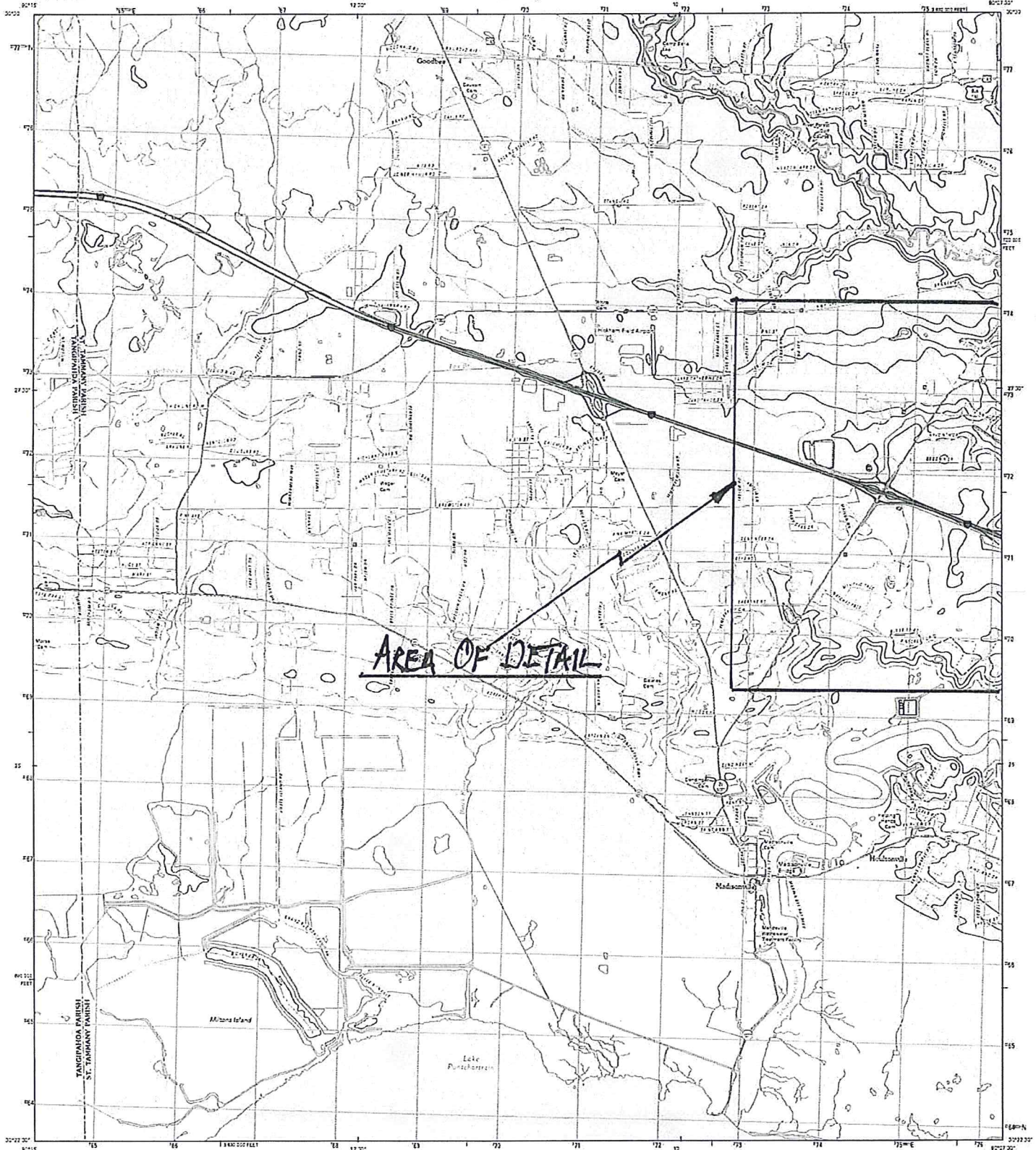
There are no other alternatives to resolve the soil shifting issue. The proposed work to this project will provide the most benefit with no long-term harmful environmental impacts. If work is not done to stop soil shifting, greater environmental impacts will occur.



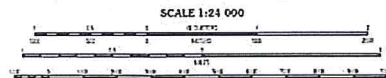
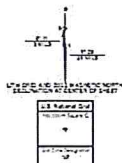
U.S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY



MADISONVILLE QUADRANGLE
LOUISIANA
7.5-MINUTE SERIES

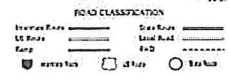
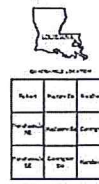


Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
North Carolina State of 1954 to 2000. Projection and
1:50,000 scale and United States National Map Act of 1932
1:50,000 scale. Includes a Coordinate System of 1983
scale and

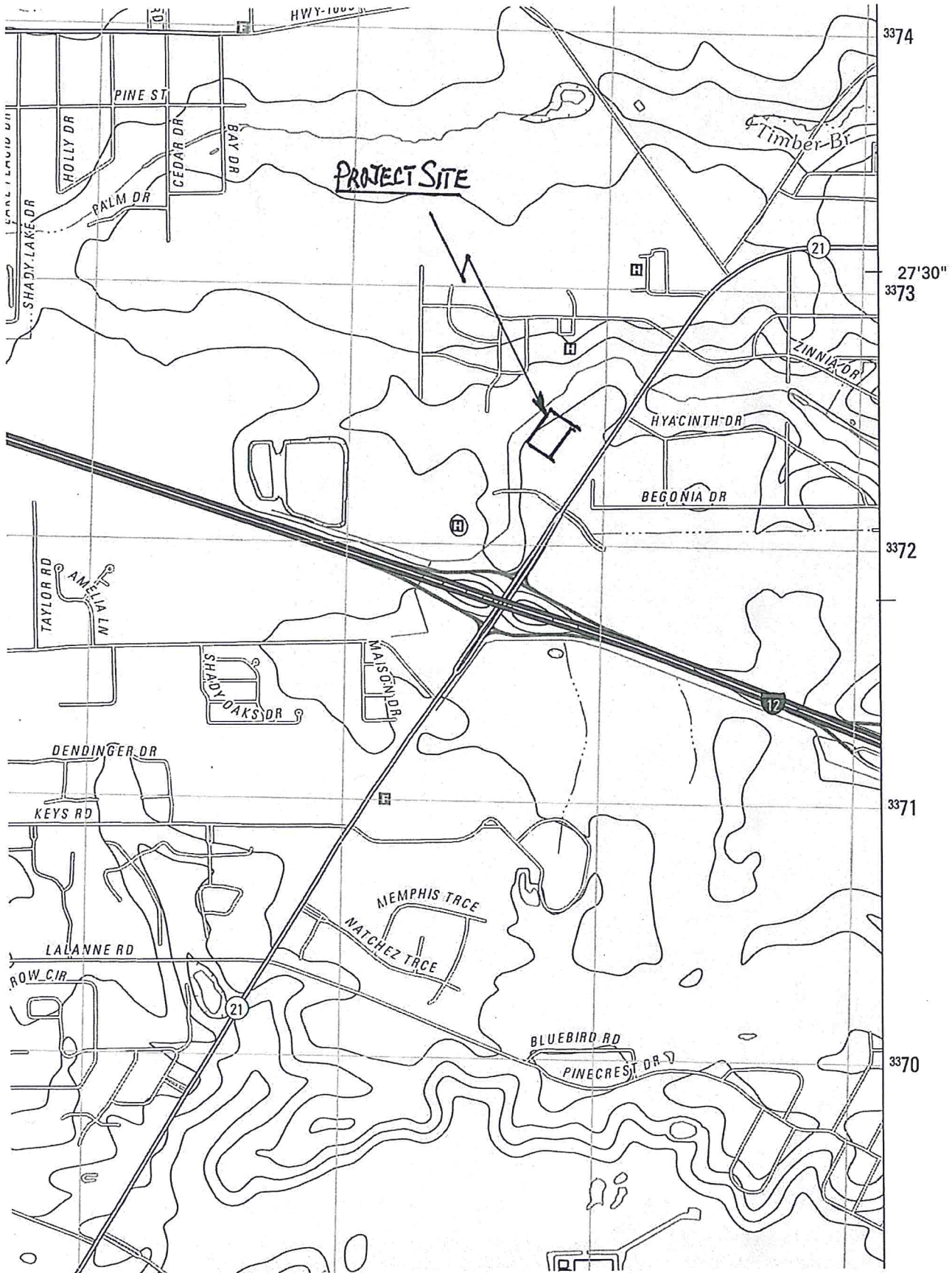


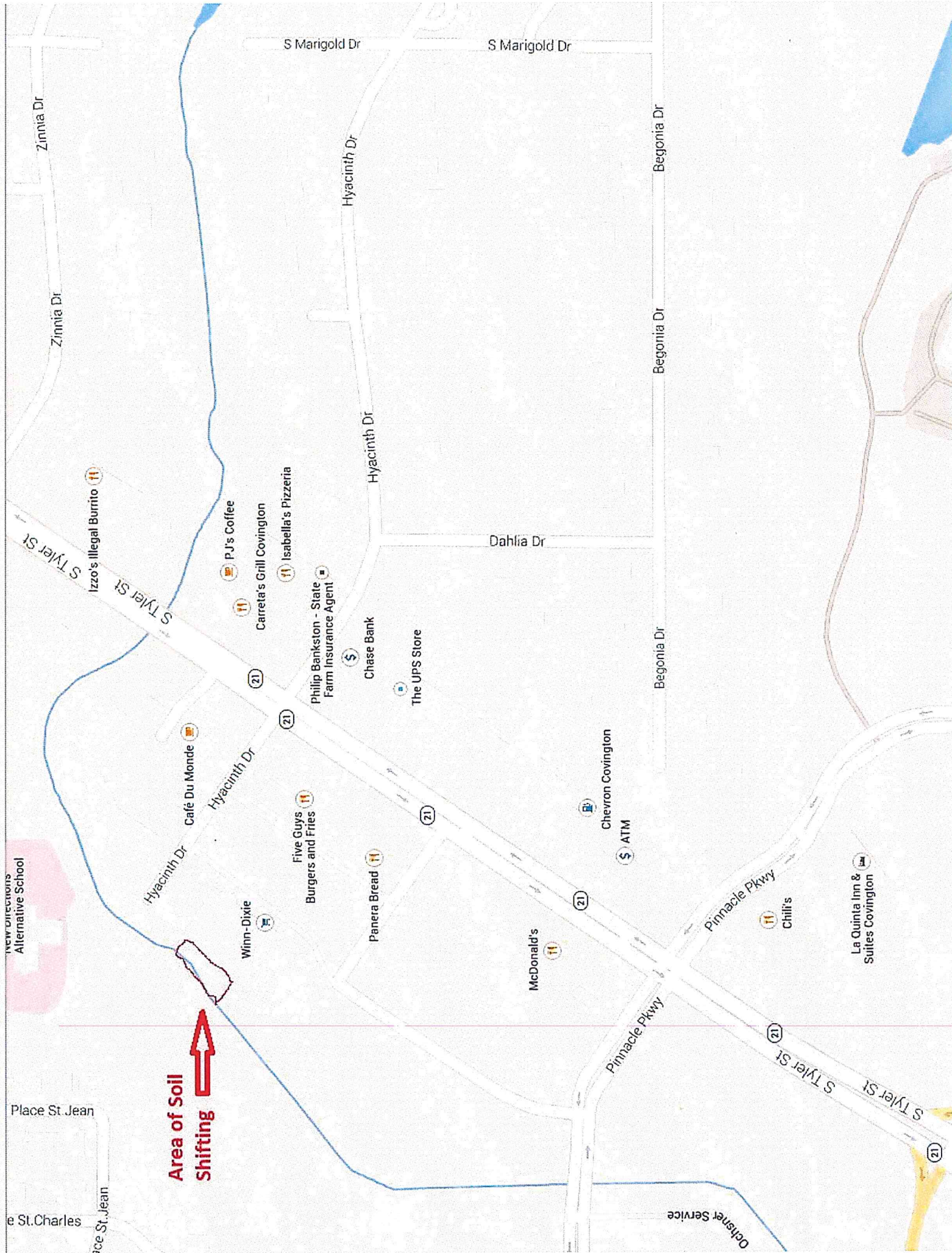
CONTOUR INTERVAL: 5 FEET
NORTH AMERICAN DATUM OF 1983

This map was produced in accordance with the
National Geospatial Program and US Topographic Series, 1:50,000
scale. It is based on the product's data version 8.83.



MADISONVILLE, LA
2012





Area of Soil
Shifting

SWPPP Details

Winn Dixie - Jet Grout Column Project

SILT FENCE INSTALLATION

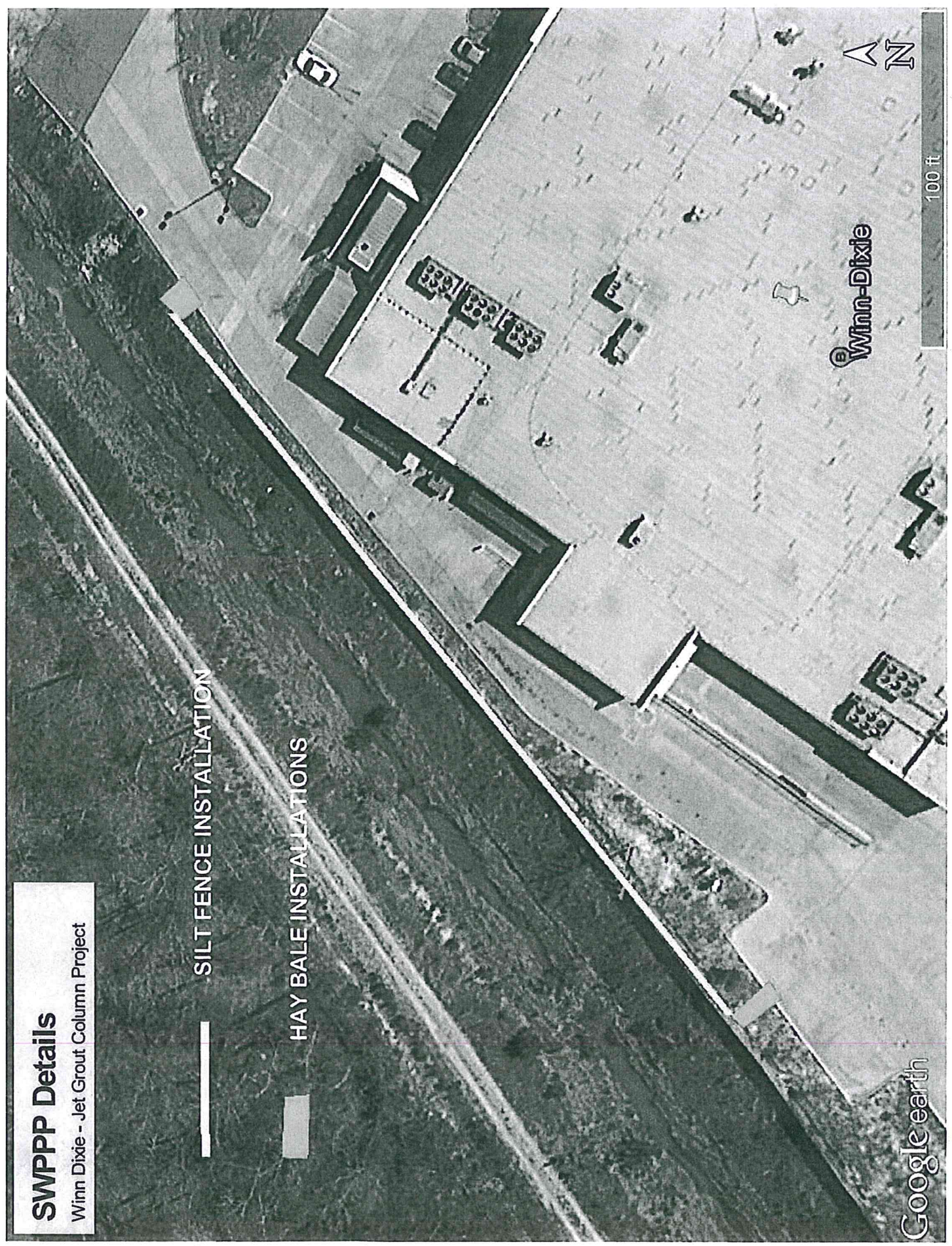
HAY BALE INSTALLATIONS

Winn-Dixie



100 ft

Google earth



USE OF PROPOSALS AND DESIGN

Designs, sketches, visualizations and proposals ("designs") prepared by the author, and any and all designs, sketches, visualizations and proposals prepared by the author's employees have been prepared for and are the sole property of the author, and in anticipation of HBI performing the work called for in such designs, HBI makes no warranties or guarantees as to the suitability of the designs for use by others. The designs are subject to protection under the copyright act of 1976 and architectural works copyright protection act of 1990, and the author, and the author's employees, shall retain all rights in and to such designs without the prior written consent of an authorized representative of HBI is strictly prohibited. HBI is and shall continue to be the sole owner of the designs.

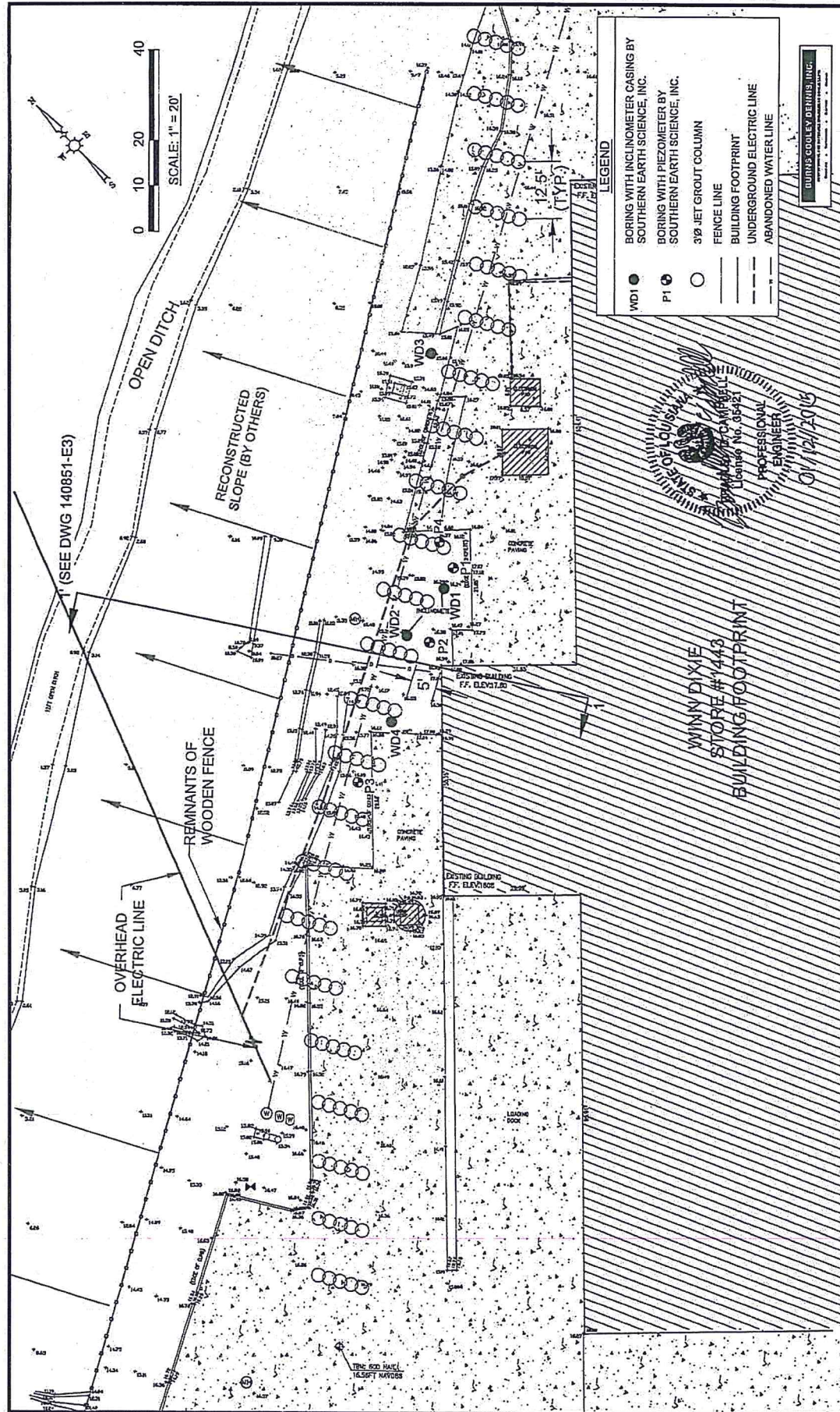
LEGEND

FENCE LINE

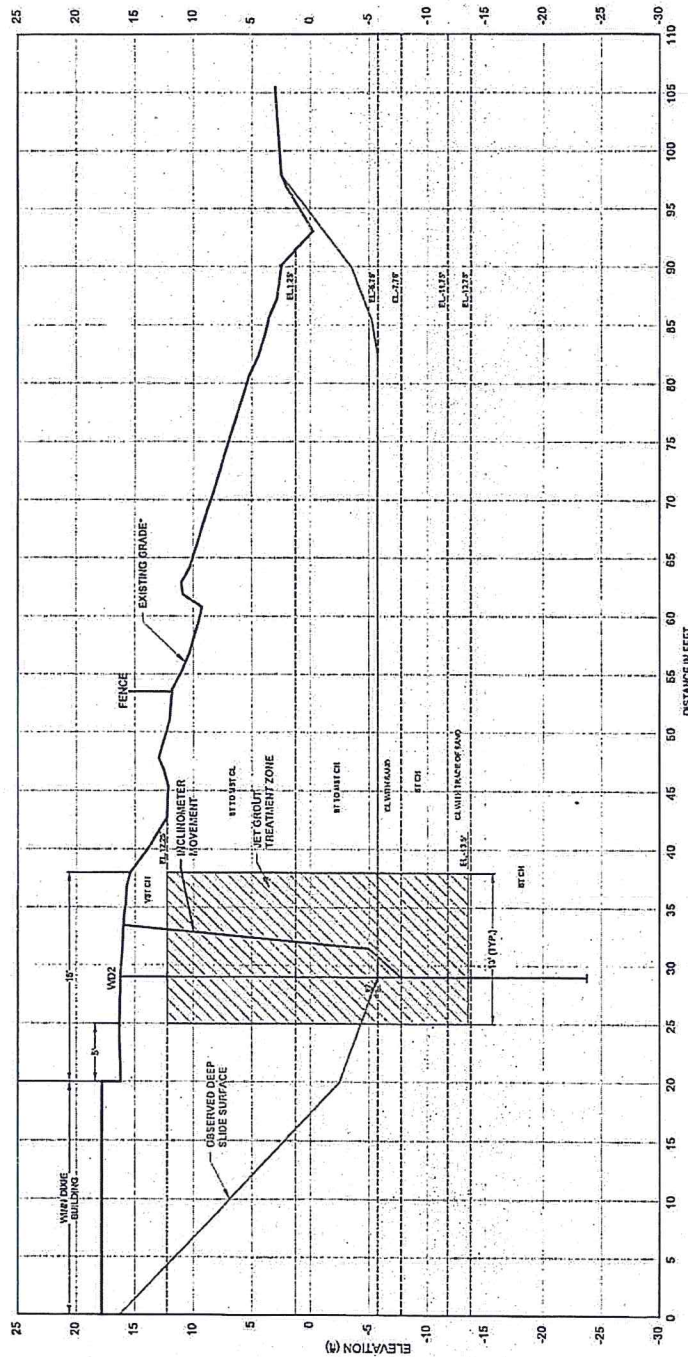
BUILDING FOOTPRINT

CONSTRUCTION NOTES:

- 1) BUILDING, STRUCTURE, AND SURVEY DRAWING PROVIDED BY NOBLES OF ASSOCIATES, LLC (DATED 10/24/2014).
- 2) JET GROUT COLUMN SHEAR PANEL LOCATION TO BE REVISED IF UNDERGROUND OBSTRUCTIONS ARE PRESENT (UNDERGROUND OBSTRUCTION LOCATIONS PROVIDED BY OTHERS PRIOR TO HBI MOBILIZATION).
- 3) REFER TO SHEET NO. JG-1 FOR JET GROUT SHEAR PANEL DESIGN.
- 4) CHANNEL SLOPE TO BE MAINTAINED BY OTHERS.

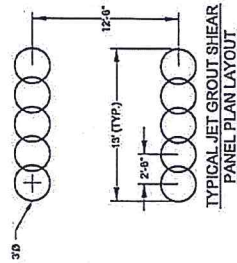


HAYWARD BAKER INC. A Keller Company		SHOP DRAWING	
PROJECT: WINN DIXIE CONTRACT: HAYWARD BAKER, INC., HOUSTON, TEXAS DATE: 140851-E2		DRAWING NO. 140851-E2	
PREPARED BY: [] CHECKED BY: [] DESIGNED BY: [] IN CHARGE: []		DATE: 01/12/2015	
SCALE: 1" = 20'		PROJECT: STABILIZATION OF DEEP SEATED SOIL MOVEMENTS WINN DIXIE STORE #1443 CONVOYTON, LOUISIANA DRAWN BY: [] CHECKED BY: [] DATE: 01/12/2015	



SECTION 1-1'
0 2.5 5 10
SCALE: 1"=10'

"ESTABLISHMENT OF STABLE FINAL SLOPE GRADE
TO THE RIGHT OF THE TREATMENT ZONE
IS THE RESPONSIBILITY OF OTHERS."



CURRIS GORDON BERNIS, INC.

HAYWARD BAKER INC. A Keller Company		SHOP DRAWING	
PROJECT: WIND DUNE CONTRACTOR: HAYWARD BAKER, INC., HOUSTON, TEXAS DRAWING NO: 140851-EXDING		SCALE: SECTION 1-1' AND TYPICAL JET GROUT SHEAR PANEL PLAN: AS SHOWN STABILIZATION OF DEEP SEATED SOIL MOVEMENTS WIND DUNE STORE #143 COWBOY, LOUISIANA SCALE: AS SHOWN DATE: 1/12/2015	
NO. DATE 101 1/12/2015	BY DATE 102 1/12/2015	CHECKED DATE 103 1/12/2015	DESIGNED DATE 104 1/12/2015
140851-E3		0	



Northwest side of Building facing southwest



Northwest side of building facing southwest towards Flower's Bayou



Northwest side of building facing west towards Flower's Bayou



Northwest side of building facing southwest



Westside of building facing west towards Flower's Bayou



Northwest side of building facing southwest



Westside of building facing west directly at Flower's Bayou



Westside of building facing northeast



Westside of building facing west towards Flower's Bayou



Southwest Corner of building facing northeast

HAYWARD BAKER, INC.

509 North Sam Houston Parkway East, Suite 300
Houston, Texas 77060
Phone – 281-668-1870/Fax – 281-668-1870

January 12, 2015

3 Zs Real Estate Co., LLC
5010 Veterans Memorial Blvd.
Metairie, LA 70006

Attention: **Roy Zuppardo**
Managing Partner
Email: rlsuppardo@cox.net Cell: 504-251-7699

Reference: Winn-Dixie Store #1443– Soil Stabilization
Covington, LA
Jet Grouting Ground Improvement

UPDATED PROPOSAL

Hayward Baker, Inc. (HBI) is pleased to provide this proposal for the design and construction of a Jet Grout ground improvement system for the above referenced project. HBI proposes to furnish all labor, equipment, materials, subcontractors and supervision to perform the scope of work as described further in this proposal and detailed on the enclosed sketches. Please note that this proposal is based upon the information from various sources, including:

1. A site visit by Marvin Iffert and Tyson Deklavs on September 18, 2014;
2. Southern Earth Sciences, Inc. slope stability evaluations, geotechnical boring and CPT logs, and survey and inclinometer data, provided via e-mail on September 23, 2014; and,
3. Additional survey data provided by Kyle Associates, LLC via e-mail on November 11, 2014.
4. Underground utility drawing provided by Roy Zuppardo
5. Design Analysis performed by Burns Cooley Dennis, Inc. for the Soil Stabilization at Winn Dixie - #1443

INTRODUCTION

HBI understands that ongoing deformations and slope stability issues have been observed along the existing Winn Dixie #1443 building and concrete pavements located in Covington, LA. The building is located southeast of an existing ditch, with slip surfaces observed along the ditch slope and extending back towards the existing building. Details regarding the site preparation activities for the building and ditch have not been provided at this time. Interpretation of inclinometer data by Southern Earth Sciences, Inc. indicates that deep seated movements have developed in a granular soil layer beneath the building, resulting in noticeable deformations to the

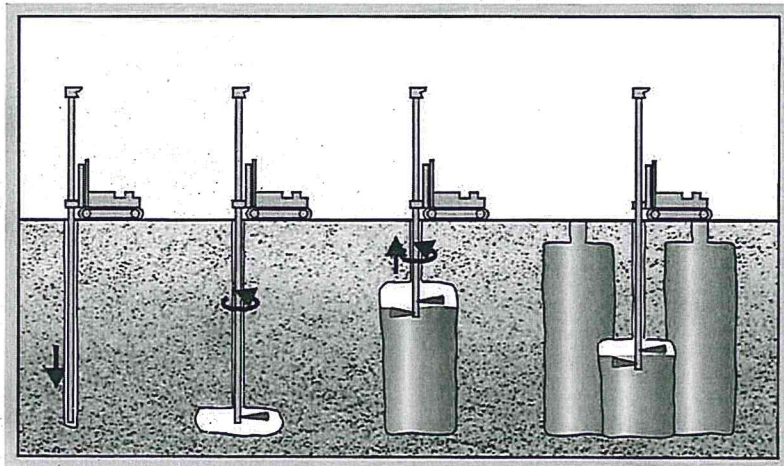
**HAYWARD
BAKER**
Geotechnical Construction

KELLER

store floor and structure. HBI has been requested to provide a ground improvement system to intercept the developed slip surface and stop further deep seated movements of the building due to stability issues along the ditch.

JET GROUTING

Due to limited space and the encountered subsurface soils (as discussed later in this proposal) at the project site, HBI proposes to utilize our jet grouting system to improve the soils at the site. Jet grouting is an erosional ground improvement method that utilizes a high-energy jet of engineered slurry to erode the soil in-situ. During this erosion process, the soil is mixed with an engineered slurry to form cemented geometries, which are referred to as soilcrete columns and/or panels. The size and geometry of the soilcrete zone is controlled by design of the nozzles in the drill rod (where the slurry exits) and the speed at which the rods are withdrawn from the soil formation.



It should be noted that during the jet grouting process, a spoil is generated (which exits out of the annulus of the drill rod) in order to maintain proper drill returns during column construction. It is anticipated that around 1500 cubic yards of spoil will be produced during the test columns and production columns. The spoil will be continually removed by trackhoes during the jet grouting process. Furthermore, it is understood that utility alignments and elevations will be clearly defined prior to the start of HBI's scope of work.

GEOTECHNICAL INFORMATION

HBI understands that a geotechnical study was performed by Southern Earth Sciences, Inc. (SES), under contract with Winn Dixie, to monitor and evaluate the ongoing deformations of the existing building and concrete paving, as well as the observed slip surfaces towards the existing ditch. SES performed a subsurface investigation consisting of four (4) geotechnical borings and two (2) Cone Penetrometer Tests (CPTs). The borings and CPTs were located between the existing building (outside of the building footprint) and ditch. Borings were drilled to completion depths ranging from 10 to 40 feet below existing grade. Laboratory testing was performed on selected soil samples to classify the subsurface soils and to evaluate the undrained shearing strength of the cohesive soils. CPT soundings were advanced to a maximum completion depth of approximately 36 feet below existing grade. SES also installed a total of four (4) inclinometers to monitor ongoing deformations after the completion of the field exploration activities.

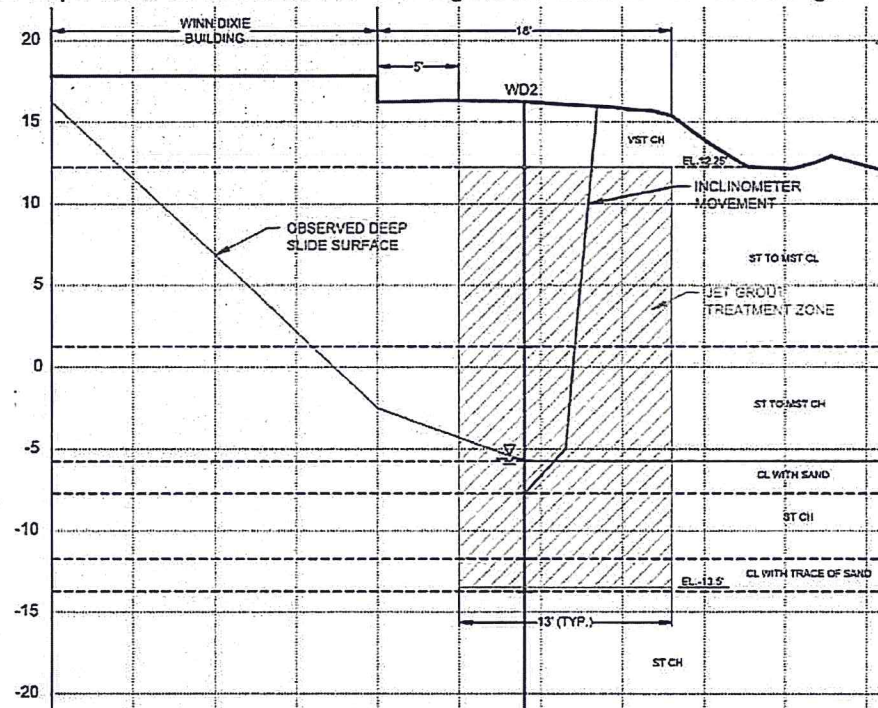
**HAYWARD
BAKER**
Geotechnical Construction

KELLER

The boring and CPT logs indicate that the subsurface soils at the site consist mainly of soft to stiff fine-grained soils (*i.e.* clays, silty clays and clayey silts) with layers of granular soils (*i.e.* sandy silts, silty sands, sands) encountered at various depths. Based upon available subsurface information, HBI has endeavored to select appropriate and cost-effective GI techniques, approximate the necessary scope, communicate the required cooperation necessary to support HBI's scope of work, and develop pricing to provide a complete project as detailed in this proposal.

SITE DESCRIPTION AND PREVIOUS SES STABILITY EVALUATIONS

HBI understands that significant deformations of the existing building and concrete pavements have been attributed to recurrent slope failures towards the existing ditch. Inclinator readings indicate both shallow and deep-seated slip surfaces, with shallow slip surfaces observed at depths less than 12 feet below existing grade and deep-seated slip surfaces occurring at depths ranging from 18 to 24 feet below existing grade. SES noted that the depth of the deep-seated slip surface corresponded to a sandy silt/silty sand layer as interpreted from the CPT data. Topographic information and survey contour lines (developed by SES) also indicate significant surficial movement along the existing slope.



A review of aerial photographs indicates that the existing ditch was re-aligned and graded prior to the construction of the Winn Dixie building. Information regarding the previous ditch geometry and re-grading activities were not provided at the time of this proposal. However, based on information provided by SES, HBI understands that the ditch was re-graded with a final slope of about 3H:1V and a bottom elevation of about El. 0 to +1 feet. Site grade for the concrete pavement was established at about El. +16.5 feet, with the finished floor elevation of the building at about El. +17.8 feet. The building was located within 25 feet of the crest of the ditch (at the loading dock location), with an assumed continuous building area load on the order of 500 psf.

SES conducted a slope stability evaluation for the existing building based on the encountered subsurface conditions, ditch geometry, assumed building loads, and observed/interpreted survey and inclinometer movements. Two cross sections were evaluated, Cross Section #1 representing the distance from the loading dock to the crest of the slope (approximately 25 feet) and Cross Section #2 representing the distance from the back of the building footprint to the crest of the slope (approximately 55 feet). Based on their interpretation of the inclinometer and survey data, SES developed a slip surface geometry (for the deep-seated slip surface) and evaluated the stability for a post-failure condition (after the full development of the interpreted slip surface). HBI understands that residual strengths were used for the cohesive soils and a “quick condition” used to model the deep seated failure through the sandy silt/silty sand layer. Results from the SES slope stability evaluation indicate a factor of safety of less than 1.0 for both short (undrained) and long (drained) term conditions.

HBI SLOPE STABILITY EVALUATION

Prior to developing a ground improvement system for the site, HBI reviewed the SES stability evaluations and performed additional evaluations to model potential slip surfaces. We used the computer program *SLIDE* (a 2-D limit equilibrium slope stability program developed by Rocscience Inc., Version 6.029) to evaluate the global rotational stability of the slope. Soil parameters and site geometry for the program were developed based on the SES soil and survey profiles, and our review of the provided boring and CPT logs. We evaluated two cases for the global stability of the site:

1. Residual/Quick conditions as developed and evaluated by SES, and
2. Rapid drawdown conditions using peak soil strengths and elevated water table.

For both cases, we assumed a building load of 500psf and a 2-foot thick soil pad beneath the entire building footprint. Our stability evaluations utilizing the residual/quick conditions provided similar results as presented by SES, with both shallow and deep-seated slip surfaces matching movements interpreted from the inclinometer data.

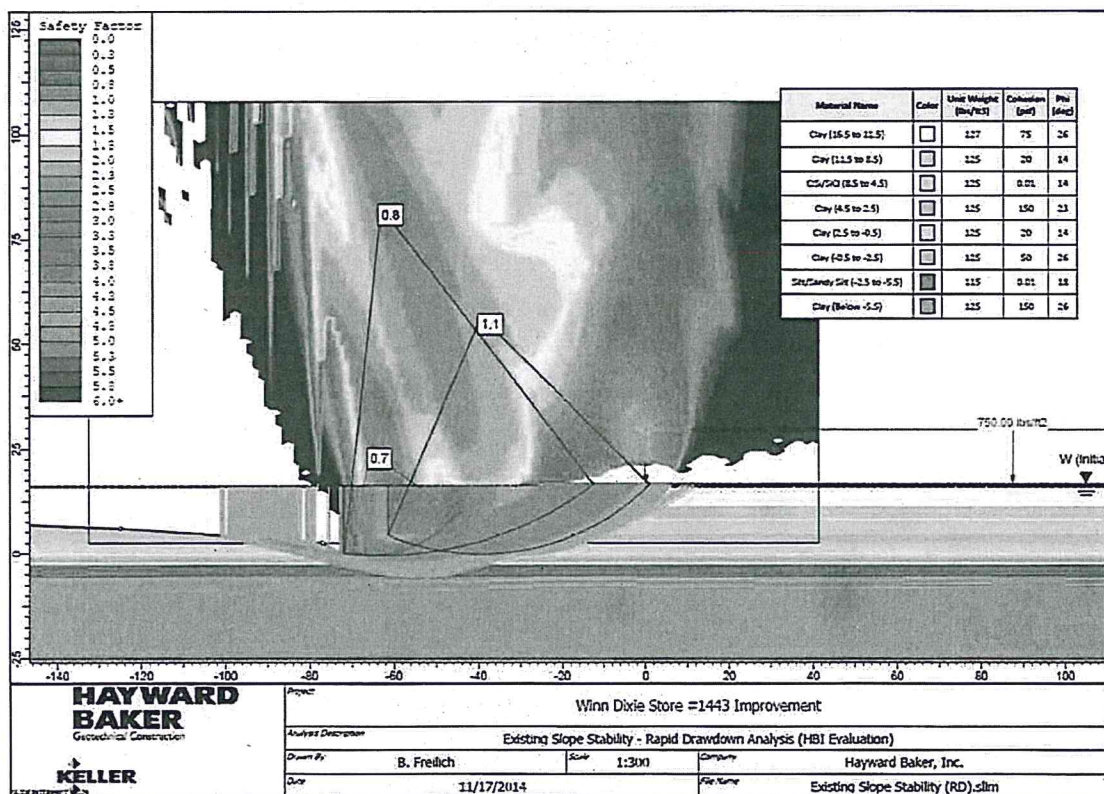
HBI also evaluated a rapid drawdown condition, which models a design scenario of prolonged precipitation events resulting in an elevated and sustained water table both within the ditch and subsurface soils (refer to figure below). As the ditch allows the water to (quickly) drain, additional shear stresses are developed within the low permeability soils to maintain equilibrium. In our evaluation, we assumed that after the re-grading of the ditch and construction of the building, an elevated water table was reached at approximately El. +16 feet within the soil profile and in the ditch. Once equilibrium was reached within the subsurface soils, the ditch was allowed to drain (water table at El. 0) while the water table within the soil remained at the higher elevation.

Typically, the effects of rapid drawdown are evaluated utilizing a multi-stage total stress method, as described by Duncan and Wright (2005)¹. However, because triaxial compression test data

¹ Duncan, J.M. and Wright, S.G. (2005) *Soil Strength and Slope Stability*. Hoboken, New Jersey: John Wiley & Sons, Inc.

(i.e. ICU with pore pressure measurement) was not available for the soils at the site, we utilized a simple effective stress approach (referred to as the B-Bar method in *SLIDE*) to estimate the change in soil stresses due to the rapid draining of the ditch. The change in the effective soil stress (due to the loss of the stabilizing water pressure in the ditch) is estimated as a change in the pore water pressure (assuming $B=1$, or fully saturated soils) within the low-permeable fine-grained soils.

It should be noted that the B-Bar model does not take into account the soil behavior during shear (i.e. dilation/compression during changes in effective stress), thus the method has only been used to estimate the stability of the building and ditch during rapid drawdown conditions. However, results from our evaluation indicate shallow and deep-seated slip surfaces at the site similar to those interpreted from survey and inclinometer data. Thus, the method may provide a reasonable approximation of the rapid drawdown conditions at the site. Furthermore, it should be noted that the cyclic raising and lowering of the water table at the site could also result in progressive development of additional slip surfaces along the ditch.



DESIGN METHODOLOGY

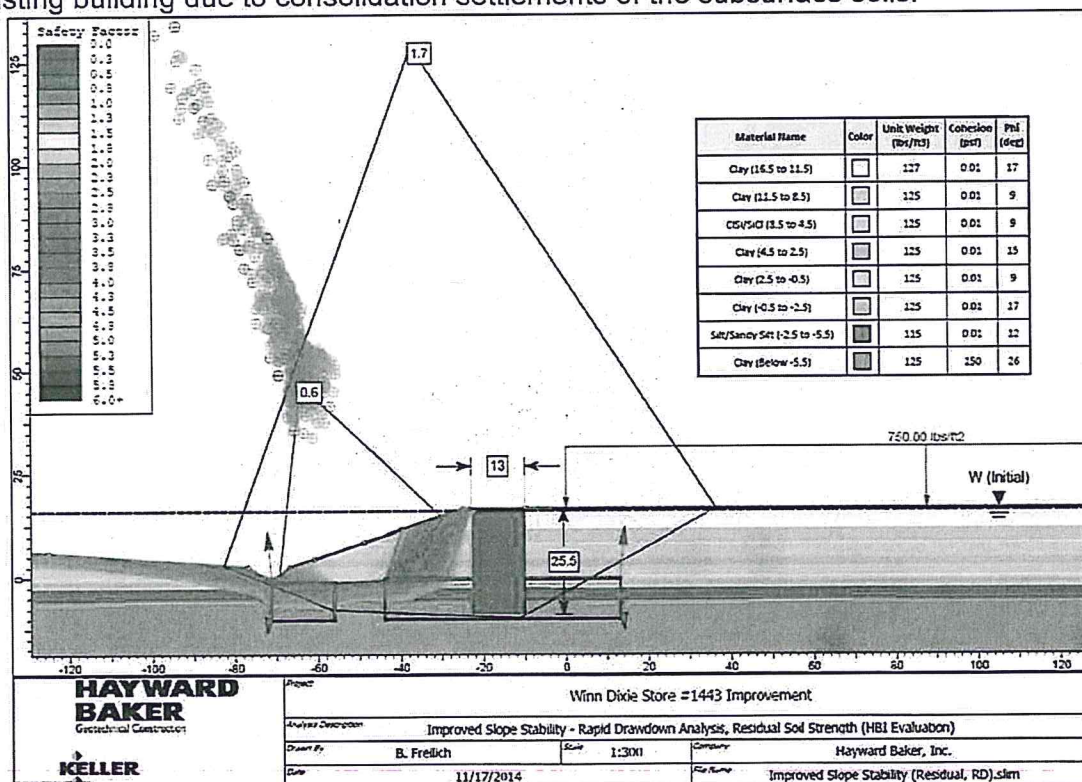
Based on the soils encountered at the site, the geotechnical information and recommendations provided by SES, and our evaluation of the slope stability, we believe that a jet grout column

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shear panel ground improvement system could provide a cost-effective slope remediation solution for the site. HBI developed a shear panel design assuming that the site and ditch grading will be re-established to the original elevations and slopes (as assumed and modeled by SES) and maintained throughout the service life of the building. The design of the ground improvement system was conducted using a minimum required Factor of Safety of 1.5 for global stability of the existing building considering the residual/quick conditions developed by SES. The stability of the shear panel system was also evaluated for rapid drawdown conditions (as described previously) and assuming residual effective soil strengths (zero cohesion and 2/3 of the peak friction angle), with a minimum factor of safety of about 1.7 for the improved zone. However, it should be noted that our evaluation indicates that shallow slip surfaces with factors of safety less than 1.0 could develop along the slope (at the original geometry and soil conditions provided by SES), thus additional improvement will be required along the slope to maintain the geometry. The internal stability of the shear panel zone was evaluated in general accordance with the methods outlined in Filz and Templeton (2011)² using a minimum soil strength reduction factor of 1.4. A cross-section and layout of the proposed jet grout shear panels is provided on Plates 140851-E2 and 140851-E3.

It should be noted that our design, as presented herein, does not prevent or limit movements of the existing building due to consolidation settlements of the subsurface soils.



² Filz, G.M. and Templeton, A.E., U.S. Army Corps of Engineers. *Design Guide for Levee and Floodwall Stability Using Deep-Mixed Shear Walls*. New Orleans District and Hurricane Protection Office, April 2011.

ACCESS

HBI will require a batch plant area within 800 feet of the work area which measures approximately 150 ft by 50 ft. HBI will work with 3 Z's and Winn-Dixie in order to locate and setup appropriate size laydown. These areas should be truck accessible via all-weather roads throughout the length of the jet grout column installation. In order to haul the spoil material, HBI will need access with haul trucks to locations around the site to stockpile the material. This area was designated during our site visit. These haul trucks will then be loaded with spoil and then stockpiled at the location designated.

EXCLUSIONS

HBI's proposal for jet grouting does not include the following items:

1. HBI will take part in obtaining the Permits or easements but will not obtain them.
2. Locating and monitoring utilities
3. Traffic or pedestrian control
4. Surveying/Construction layout
5. MBE/WBE participation
6. Monitoring and nearby structures
7. Reestablishing any landscape or concrete that needs to be demoed to perform HBI's scope of work
8. SWPPP – HBI will install a silt fence and hay bales to protect HBI's spoil and grout to from entering the existing ditch

CLARIFICATIONS

1. HBI understands that there are underground utilities at the site, and the location of these utilities has not been provided at the time of this proposal. HBI requires that utilities are to be pot holed, located and monitored by the Owner prior and during the work. Note that jet grout shear panels may need to be re-located based on the location of the utilities.
2. Owner to supply enough fresh potable water to perform the jet grouting operation.
3. HBI to install jet grout columns per approved layout by SES, 3 Z's geotechnical consultant.
4. In the event HBI encounters an obstruction that cannot be penetrated through standard means of drilling, HBI will install additional columns to go around the obstruction and form the panel.

SCHEDULE

Based upon the aforementioned scope of work HBI will require approximately the following durations for the work once mobilization has been completed:

Jet Grout Mobilization – 3 days

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Test Section – 2 days for installation
Jet Grouting – 25 work days
Jet Grout Demobilization – 2 days

The above referenced durations do not include time for testing or any potential or unforeseen delays. It is HBI's intent to mobilize to the jobsite one time and work unobstructed for the duration of HBI's scope of work.

We have attached our schedule of prices and list of conditions herein. This letter and its attachments constitute HBI's proposal and will be made a part of any contract between the 3 Z's and HBI. The acceptance of the price of this Proposal shall evidence the concurrent acceptance of all terms and conditions recited herein or incorporated by reference. Any resulting contract will not include any other agreements or documents not specifically given to HBI and referenced herein.

We trust this proposal is of interest to you and we look forward to being of service. If we can be of any assistance in clarifying any points in this proposal, please contact us at (281)-668-1870.

Sincerely,
HAYWARD BAKER INC.

A handwritten signature in black ink, appearing to read 'TD', followed by a large, stylized loop.

Tyson Deklavs
Area Manager